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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PATEL, ASHOK

ART UNIT PAPER NUMBER

2879

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/926,494

Applicant(s)

SAMUEL ET AL.

Examiner

Ashok Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4,7,9-22,26-30 and 33-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33 and 34 is/are allowed.
- 6) ☒ Claim(s) 4,7,9-22,26-30,35 and 38-41 is/are rejected.
- 7) ☐ Claim(s) 36 and 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2002 and 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>07012004</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. The following is a quotation of the second paragraph of 35

U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9, 11, 16, 17 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 9 and 16: a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present

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instance, claims 9 and 16 recites the broad recitation "50-2000 nanometers", and the claim also recites "100-600 nm" and further "350-450 nm" which are the narrower ranges.

As to claim 11, the term "any or all microstructured layes" lacks an appropriate basis. Base claim number 35 recites only microstructure means. Further the base claim does not define or recite microstructured means as being microstructure layes.

As to claims 17 and 19: the term "the layer" lacks antecedent basis in claims 17, 19 (three separate occurrences).

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 4, 9-20, 35, 38-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Oda et al (USPN 6,476,550, of record).

Oda et al disclose a light-emitting diode (LED, Figure 2) including: a plurality of layers (2-5) overlying a transparent substrate (1), the substrate including a corrugated (grooved and ridged) surface forming a grating (having a depth of 200nm, as recited in claims 9, 15 and 16, see col. 14, line 26), the layers including a transparent conductive anode (2) overlying the corrugated surface, a light emitting layer (3) overlying the conductive anode, and at least one electrode layer (4) overlying the light emitting layer, wherein at least one (e.g. layer 5) of the layers overlying the corrugated surface of the substrate includes periodic microstructure means for manipulating spontaneous emission and propagation of light by coupling non-radiative waveguide modes to far-field radiation.

As to claim 4, Oda et al disclose, in Figure 2, the microstructure means as generally lateral and extending substantially in a parallel plane to one or more layers.

As to claims 10-14 and 17, Oda et al disclose at least one component of (layer 3) the device capable of emitting light by luminescence. Oda et al disclose the microstructure means as a solid continuous layer. Oda et al disclose the microstructure means providing the entirety of one of the plural layers. Oda et al further disclose the microstructure means as a diffraction grating (5). Oda et al further disclose the microstructure means including

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corrugations in the form of one or more non-planar surfaces of layers and having an array of opposed portions. The corrugations are in the entirety of the layer

As to claim 18, Oda et al disclose the microstructure means including the areas (from left to right shown in Figure 2) of modified refractive index for being of different composition from that of other layers.

As to claim 20, Oda et al disclose LED including organic layer (col. 6, line 33 to line 67).

As to claims 38 and 39, at col. 6, lines 33-61, Oda et al discloses the use of light emitting and/or conductive polymer as one or more layers.

As to claim 41, Oda et al teach the method of producing device including the step of adapting the device as recited in applicant's claim 41. Applicant's limitation of such that there is at least one substantially periodic microstructure means..... is not given a patentable weight since it is functional and narrative in nature and does not constitute any positive method limitation.

Consequently, Oda et al anticipate applicant's claims 4, 9-18, 35, 38-41.

5. Claims 41 and 28-30 are rejected under 35 U.S.C. 102(a) as being anticipated by Barnes et al (WO 98/25313, of record).

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Barnes et al reference teaches a method of manufacturing an LED (Figure 5, Page 8, Lines 3-7) including "adapting" of the LED. Note that the limitation of "such that there is at least one....." is narrative in form and does not constitute a method limitation. Also note that the language/limitation that appears after the term "adapting" constitutes optional language as per MPEP Section 2100. The Examiner notes that the claim includes only one step which is the "step of adapting the device....."

As to claims 28-30, Barnes et al disclose the microstructure means produced by photolithography (page 3, lines 24-25). The Examiner notes that the claim includes the step of incorporating Barnes et al disclose the microstructure means produced by interferometer to fabricate the substrate. Barnes et al further disclose the microstructure means transferred from photoresist layer to the substrate (page 10, lines 7-9).

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 7, 21, 22, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al, as applied above to claims 35 and 41.

Oda et al disclose the microstructure means, but does not disclose many regions of different periodicity in it. However, it is noted that the inclusion of different regions of periodicity is not shown to solve any problems or yield any unexpected results that are not within the scope of Oda et al's LED. Accordingly, the inclusion of different regions of periodicity is considered to be an obvious matter of design choice.

As to claims 26, 21 and 22, Oda et al disclose the organic light-emitting layer but does not specify the light-emitting layer material being semi-conducting material, as claimed by applicant. However, it is well known in the art to dope the organic luminescent layer material with semi-conducting material within LED device art for optimizing light-emitting property.

As to claim 27, Oda et al further disclose the organic (light-emitting) layer being coated by conventional evaporation or spin-coating method (col. 13, lines 16-18).

8. Claims 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barnes et al, as applied above to claim 41.

Barnes et al disclose the use of a light-emitting layer but does not specify the material. It is well known in the art to use either of organic and inorganic material for the luminescent layer within LED device. The semi-conducting layer has lateral periodic microstructure.

9. Claims 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barnes et al in view of Ueda et al (USPN 6,060,826, of record).

Barnes et al disclose a semi-conducting layer but does not specify how the layer is coated. The Ueda reference teaches that the organic luminescent layer may be formed by spin-coating or dip-coating (Column 7, Lines 22-29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the organic layer by spin-coating or dip-coating, as taught by Ueda.

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10. Claims 36 and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior art of the record does not disclose applicant's claimed LED of entire claim 35 wherein the substrate includes a photoresist layer having corrugated surface.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok Patel whose telephone number is 571-272-2456. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.


Ashok Patel
Primary Examiner
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